

INSTRUCTIONS

FOR THE

SUCCESSFUL PRACTICE

OF THE

“FOTHERGILL DRY PROCESS,”

ALSO,

REMARKS UPON THE

PRESERVATIVE PROCESSES

GENERALLY, AND UPON THE WET.

BY ALFRED KEENE,

Chemist,

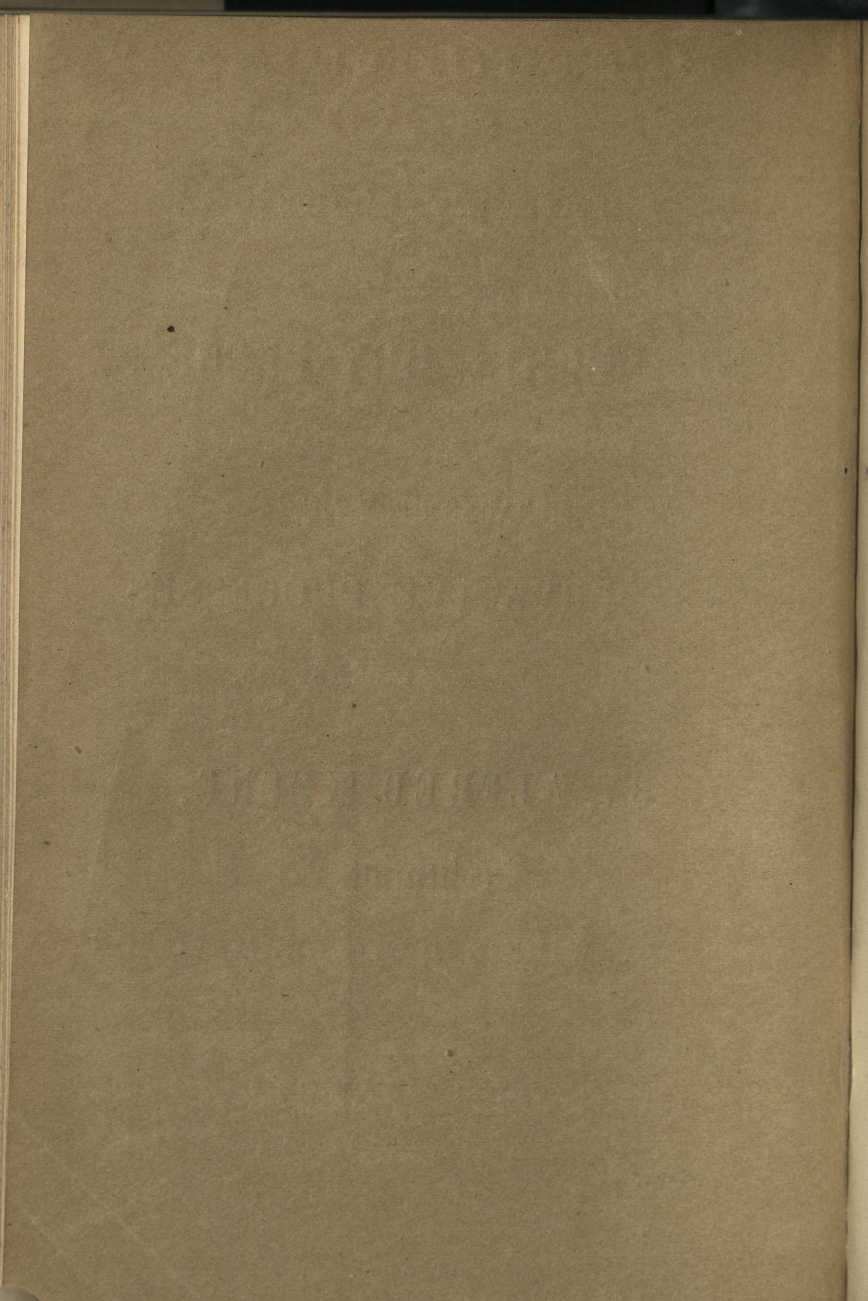
115, WARWICK STREET, LEAMINGTON.

PRICE SIXPENCE.

Gratis with the large sizes of Collodion.

BIRMINGHAM:

PRINTED AT M. BILLING'S STEAM-PRINTING OFFICES, LIVERY STREET



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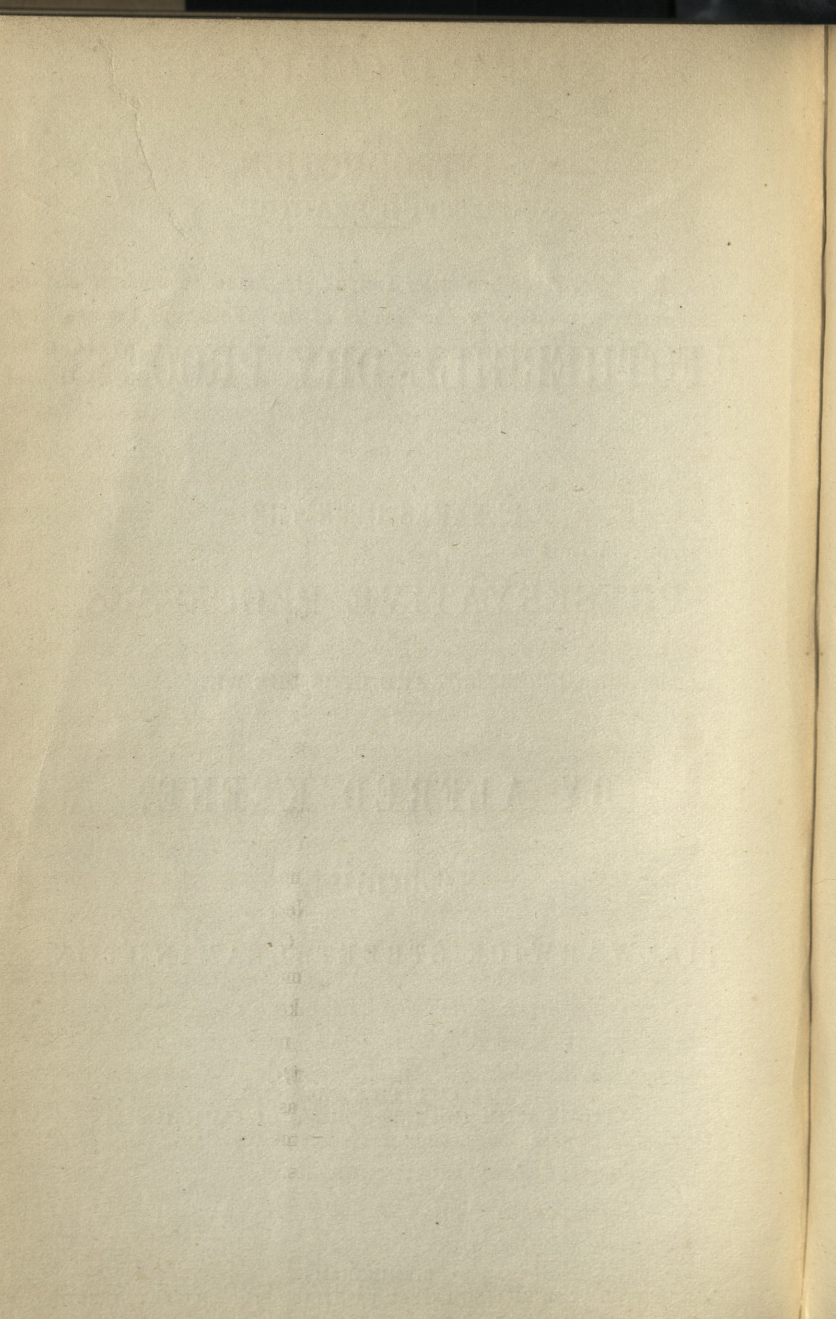
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INTRODUCTION.

THE present edition will, I think, be found to contain all the information necessary for the practice of the "Fothergill Process," not only with the greatest ease and certainty, but also so as to obtain the most perfect results. In it I have endeavoured to anticipate and provide a remedy for every probable, if not possible, cause of failure, even to the most inexperienced; and for this purpose have availed myself of the advantages of considerable practical experience, an extensive correspondence, and the communications that have from time to time appeared on the subject in the *Photographic "Journals"* and "*News*."

The details are consequently necessarily somewhat elaborate; the more so as I have preferred erring rather on the side of superfluity of information than the reverse, not only that the certain and beautiful results to be obtained by the process may be fully realised, but that the necessity for the frequent inquiries I am receiving may be to a great extent obviated.

I have also introduced a brief account of the chief Preservative Processes, as well as of the Wet; in every instance taking it for granted that the reader is *not* an entire novice in the practice of the art, but is able to take both Positives and Negatives by the Wet Process.

With regard to the Taupenot, or Collodio-Albumen Process, ill health and pressure of business engagements prevented me completing the series of experiments I had undertaken preparatory to bringing out a fresh edition before the last was so near out of print that further delay was inadmissible. This, I trust, will be sufficient excuse for introducing an untried formula, which, as I have stated, when treating of the process, suggested itself to me from experiments on the "Fothergill Process" with the chlorides.

August, 1859.

THE FOTHERGILL PROCESS.

This beautiful Dry Process is now acknowledged pre-eminent for ease and facility in manipulation, absence of blisters, sensitiveness, and certainty and beauty of results, in some respects even excelling those by the Wet Process, particularly in richness of detail, and the manner in which near and distant objects are rendered by it in the same picture; and though the case was at first different, when its principles were but little understood, and myself almost alone in its support and defence, scarce a number of the *News* or *Journals* now appear without some such satisfactory account as that of Mr. Stafford,* where, in reply to a challenge for the production of a good negative by the "Fothergill Process," with an exposure of 30 *seconds*, he states that out of twenty-four plates, prepared eight days previously, and exposed in one day, the exposure not exceeding, for any of them, 30 seconds, he obtained *twenty-three* perfect negatives, the editor remarking that the specimen stereogram was the *most perfect he had ever seen*; or that of J. N., Highbury New Park, in which he states that out of six dozen plates taken on a tour and exposed during *good, bad, and indifferent* weather, *five dozen* good negatives were obtained, the last being developed *a month* after prepared, the failures not arising from defect in preparation, but under and over-exposure, &c.

Instructions.

OPERATING ROOM.

This should be dry, and as free from dust as possible, and if required for working in during cold weather, possess convenience for raising the temperature to at least 54° Fahr.; when lower than this, the chemical actions and union of solutions are considerably retarded, and a longer time than stated will have to be allowed for these purposes, both in preparing and developing.

The light admitted should be as little as will answer the purpose, and deep yellow. If the room contain a window, two or three double

* *Vide* recent Nos. of *Photographic News*. I have much satisfaction in stating that in both cases my collodion was used.

panes of deep yellow glass can be put in, and remainder covered with thick brown paper, or the whole covered with common unbleached calico that has been well coated with chrome and king's yellow, mixed with rather thin copal varnish. The calico is stretched out, and varnish applied with a paint brush. When dry, if necessary, repeat the coating. This plan, adopted with much success by an ingenious amateur here, is simple and economical. If artificial light is used, it should pass through the calico above described, or yellow glass. The light ought occasionally to be tested by exposing, near the window, a sensitized wet plate for about ten minutes: if after applying developer and washing it is quite cleared with the strong hypo-fixing solution, it may be considered satisfactory; but if fogged, another pane of deep yellow glass, or thickness of prepared calico, should be put over the other. These precautions with regard to light of operating room equally apply for all the preservative processes, owing to the length of time plates are exposed to it during preparation and development.

GLASS PLATES.

These require to be perfectly clean. The most expeditious and effectual way of obtaining them so is to use the Plate Cleaning Liquid, as directed, or the following may be substituted:—mix prepared chalk, free from grit, to about the consistence of cream with spirits of wine; if the glasses are new they will merely require washing under a tap and drying before applying it, but if they have been used, place them for a few hours in a solution of common washing soda in soft water—not hard, or the lime will be deposited upon the glass and necessitate immersion in dilute nitric acid,—well wash and wipe dry, then having firmly fixed the plate in any convenient way, pour a little of the preparation in the centre and briskly rub it all over with a pad made of chamois leather until spirit has evaporated and powder become dry; remove the latter from edges and back and front, and place in box for use. Glasses should never be cleaned in operating room on account of the dust produced.

COLLODION.

To the preparation of a collodion adapted for this process I early turned my attention, with what success I refer the reader to page 18, under the head Collodion. If after some time using the collodion gives too creamy a film, reduce to its original consistence by adding a mixture of one part alcohol, four parts pure ether.

BATH SOLUTION.

In a 20-ounce glass measure put 700 grains of pure prepared nitrate of silver and 3 ounces of distilled water, to these when dissolved add 6 grains of iodide of potassium previously dissolved in one drachm of distilled water, stir with a glass rod until yellow precipitate is dissolved, then pour in sufficient distilled water to make the whole

measure 20 ounces ; in about 12 hours filter, if necessary passing it a second or third time through the filter till quite clear ; lastly, add one or two drops of glacial acetic acid, the larger quantity necessary if silver contains any oxide. This bath is slightly acid to test paper, and suitable for all negative purposes. Its strength should be kept up by the occasional addition of prepared nitrate of silver, allowing nearly two grains for each stereoscopic size plate sensitized, larger sizes a quantity in proportion.

PREPARED ALBUMEN.

Take White of Eggs	10 ounces.
Distilled Water	10 to 15 ounces.
Strong Liquor of Ammonia	80 to 100 minims.

Agitate in a bottle that will hold double the quantity until well frothed. The quantity of water necessary depends upon the consistence of whites of eggs, generally speaking the larger quantity is required in summer. The Prepared Albumen should be of a consistence to filter readily through filtering paper and flow easily over the plate. It will be found to work better when a week or ten days old, and sufficient for a month's consumption or more may be prepared at once if bottle is kept well corked to prevent evaporation of ammonia.

PREPARED ALBUMEN WITH MURIATE OF AMMONIA.

Dissolve 6 grains of the latter salt in each ounce of Prepared Albumen. Attention was directed to the increased sensitiveness obtained by adding chloride of ammonium or muriate of ammonia to the Prepared Albumen by a correspondent in the *London Photographic Journal*, (April), but both keeping properties and richness of half-tone are generally supposed to be to some extent sacrificed, though further experience may remove this impression. The same remarks also apply to the substitution of Prepared Gum with muriate of ammonia for the Prepared Albumen, by which I found sensitiveness still further increased and time occupied in developing considerably lessened, particularly in cold weather : it is made by dissolving 1 ounce of picked gum arabic and 30 grains of muriate of ammonia in 6 ounces of distilled water, and adding 25 minims strong liquor of ammonia. All three are used in the same way, but for general purposes I prefer the original Prepared Albumen, and shall therefore mention it only when giving directions for coating with albumen.

MANIPULATION.

I have here introduced four methods of proceeding ; for though, after endeavouring to give unbiassed attention to each modification that appeared worthy of notice, my opinion of the merits of the 4-drachm washing remains unaltered, yet as the others also produce very excellent and certain results, and under some circumstances one may appear to the operator more convenient than another, I have introduced them.

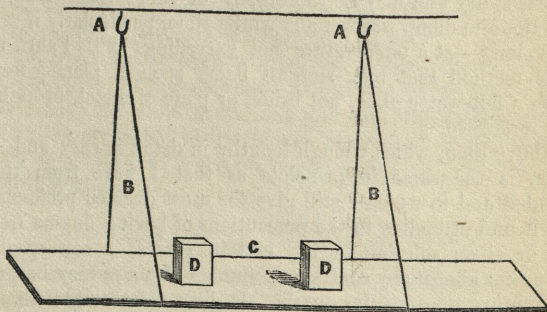
PREPARING PLATES.

Coating and Sensitizing.—Having carefully removed dust with a clean leather or brush kept for that purpose, coat with Collodion, and when well set,* immerse in Nitrate bath; in about a minute move it up and down, and in two or three minutes—according to temperature—remove, wipe the back with blotting paper, and place on levelling stand, pneumatic holder, or suspended shelf,† and proceed by either of the following methods:—[NOTE.—As success chiefly depends upon this part of operation about to be described, much attention should be paid to it.]

No. 1.—Having placed the plate on a block across the suspended shelf, have ready for a stereoscopic-size plate, 4 drachms of distilled water, which *at once* pour lightly on at one corner, or along the end, and cause it to flow to the opposite end; or better still, by which risk of over-washing and loss of sensitiveness at one end is avoided, hold glass near surface of plate and commence to pour lightly on end nearest you, gradually advancing as the wave proceeds to opposite one, that the water may fall on the deepest part only—easily acquired with a little practice—the necessary inclination being given to plate by pressing gently on other side of shelf, reverse the pressure that water may flow back again, then from side to side by a lateral movement of shelf,

* The time required varies from two or three seconds in summer, when temperature is very high, to thirty or more when low; if *slightly* transparent at extreme upper corner and free from zigzag marks when removed from bath, the correct time has been hit.

† This kind of shelf I have found so exceedingly convenient, both for preparing and developing, that I annex a diagram; in the former case a much greater force may be given to the wave of water, when diluting bath on surface, *without spilling any*, than when either levelling stand or plate holder is used, the flow being so much smoother; and in the latter several negatives can be developed at the same time, as the shelf is easily levelled, and developer kept in motion evenly over all of them; in comparative experiments it is peculiarly valuable. One end and separate blocks should be kept for preparing, and another for developing, and separate cells under each—that for latter purpose being *lower* than the other, that plates during preparation may not be injured by contact with developing or fixing agents. The use of this shelf, with the aid of a few India rubber finger stalls, is also the nearest approach to Photography with clean fingers I know of.



A A—Hooks screwed into ceiling, about 3 feet apart. B B—Two pieces of Cord of equal lengths, doubled and suspended from the Hooks. C—A level piece of well-seasoned Board, from $\frac{3}{4}$ to 1 inch thick, about 6 inches wide and 4 feet long—more or less according to size required—placed upon the cords; by lengthening or shortening the latter, the shelf is easily and perfectly adjusted; it should be at least 3 feet from the hooks, or as many more as will bring it a convenient height for operating. D D—Square or round Blocks, 3, 4, or more inches high, and smaller in diameter than width of plate.

carrying it well up to edges of ends and sides; continue this for about half-a-minute in summer, or a minute in winter—large plates about double the time—until all greasiness disappears and the bath on surface is *evenly diluted in every part*, when sufficient motion may be given to send most of the water *over* the edges, or—which for a beginner is perhaps preferable—return it into the glass and pour it lightly on and off several times, letting it run over edges of ends and sides (if the plate is held in the hand for this purpose, care must be taken that fingers are free from the more concentrated nitrate bath), drain for a second or two and apply the Albumen; for this purpose the plate may remain in the same position as for applying water, and sufficient (about $1\frac{1}{2}$ drachm for Stereo-plate) of the prepared Albumen, previously filtered, poured on to coat it, pass it round two or three times *well up to edges*, conducting it if necessary with a silver or glass rod so as to avoid disturbing the film, then add to it as much distilled water as plate will conveniently hold; agitate freely that they may mix, *empty off over the edges of ends and sides*, wash the back of plate by pouring a little water over it, and well wash as follows:—place the plate in a dish containing sufficient distilled or filtered rain water to cover it to the depth of a quarter of an inch or more, agitate freely, that the water may flow backwards and forwards over it, continue this for half-a-minute or a minute, towards the last lifting up the plate that water may pass under it, repeat with a second or even third quantity of water; if wanted for long keeping, take it out, flush the surface with a small quantity of distilled water and place at an angle, sensitized surface inwards, on two or three thicknesses of blotting paper, in a perfectly dry place, upon and leaning against *glass or porcelain* to dry. After about ten or fifteen minutes change the blotting paper for a single thickness of dry, the first lot should not be again used, but this last may several times for the same purpose. In about half-an-hour or an hour, according to state of atmosphere and dryness of room, the plate will be surface dry and may be thoroughly or film dried—this should always be done in damp weather and winter time, particularly if required to be kept long—at a temperature not exceeding 120° Fahr., by any convenient method that may suggest itself, such as placing for a few minutes on a hot-water plate, hot brick, or plate of metal, brought into operating room, &c.

The above plan, which though lengthy in detail is easy and simple in practice, is the same in principle as that I have from the first recommended and to which I still give the most decided preference; by following it and attending to the precautions of having fingers free from Albumen or silver solution during certain stages, I can speak from experience that almost any continuous number of plates may be prepared without stain or non-sensitive mark. It gives a firmer film than when a more dilute Albumen is used; and is more sensitive, with exception of Mr. Shadbolt's modification, and also gives more vigorous pictures than either the diluted Albumen or diluted second silver bath.

The advantage of an assistant whose *hands are free* from Albumen and bath to take up the operation from the point where the plate is placed in the dish to be washed, will suggest itself both with this and

following plans; the operator is thus enabled to have a second plate sensitizing while the first is going through the other stages of preparation, which will be ready for removal by the time the first has had Albumen applied, place in dish to be washed, and fingers freed from Albumen, when a third may be coated and so on.

The time occupied in preparing a plate, *with care*, is from four to six minutes, according to size; one *may be* prepared in half that time, but my object in the present pamphlet is to show how the best and most certain results are to be obtained.

No. 2.—Mr. Shadbolt's modification, from *Photographic Journal*, July, 1859.

This differs from the preceding in the use of *half* the quantity (two drachms) of water for first washing, which is to be poured on and off the plate, until even dilution is effected, and the substitution of a more dilute Albumen, composed of prepared Albumen three parts, distilled water eight parts, with the addition of one grain of Chloride of Ammonium to each ounce.

No. 3.—Coat and sensitize plate in usual way, then place in a dish containing sufficient of the following weak silver solution—

Prepared Nitrate of Silver	1 drachm.
Distilled Water	12 ounces.

to cover it to the depth of a quarter of an inch—or a vertical bath may be used; move it for about half-a-minute or a minute till greasiness entirely disappears, then take it out, apply prepared Albumen, and proceed as directed in No. 1.

The dilute bath will occasionally require the addition of a little distilled water or it becomes too concentrated.

No. 4.—Mr. Lloyd's dilute Albumen modification.—

In this case instead of bath solution on surface of plate being reduced to a point that will not coagulate Albumen, the Albumen is reduced so that it will not be coagulated by bath.

Coat and sensitize plate in usual way; upon removal from bath it is to be drained for a few seconds on blotting paper, and back carefully wiped; it is then to be placed in a well dish and flushed with a mixture of *one* part prepared Albumen and *nineteen* of distilled water, which should be passed over it several times; afterwards well wash and dry as before directed.

EXPOSURE IN THE CAMERA.

This is so variable, depending not only upon subject and intensity of actinic rays, but also on locality, that it is difficult to give even an approximation; experience, however, soon remedies this deficiency.

With plates prepared by No. 1 method, *without* chlorides in Albumen, the *mean* exposure Inland may be considered during spring and early summer, from forty-five to ninety seconds; minimum from twenty-five seconds; autumn and winter longer.

On most and probably all parts of the coast, Channel Islands, and

Isle of Man, little more than half the above exposure, the *mean* being about twenty-five to thirty seconds.

When prepared gum, with chloride of ammonium, or albumen with latter salt added, is used, and plates exposed, *within about twenty-four hours of preparation*, the minimum exposure may be considered about twelve seconds in spring and early summer. Under exposure is indicated by intense skies and deficient detail; over exposure by weak skies and full detail.

DEVELOPING.

Four solutions for this purpose are here given, which can be used according to circumstances or choice of operator. The surface of plate is to be moistened with distilled water, and the requisite quantity of developing solution (about three drachms for a stereo-plate) containing silver solution poured upon it, which is to be kept in motion, being changed as often as it becomes coloured, and the plate washed before application of a fresh quantity, until sufficiently developed. Over development, producing intense negatives, which require a great deal of printing and give objectionable black and white or snowy-looking positives, should be avoided. Many otherwise excellent negatives are spoiled in this manner. No advantage is obtained by continuing the development after details are well out, unless for some particular object, for though details in shadow may be more fully brought out, those in high lights are proportionately lost from excess of intensity.

The time occupied in developing with solutions No. 1, 2, and 3, varies from five minutes upwards, and solution No. 4, from about an hour upwards.

No. 1.—Pyrogallie Acid 1 grain.
Glacial Acetic Acid 10 to 20 minims.
Distilled Water 1 ounce.

Dissolve, and just prior to use, add to each drachm two or three drops of a ten-grain solution of nitrate of silver. Always use a simple solution,—not the bath which contains iodide of silver, that would be precipitated and cause minute pin holes in negatives.

This is a very useful general form.

No. 2.—Pyrogallie Acid $1\frac{1}{2}$ grain.
Glacial Acetic Acid 20 to 30 minims.
Distilled Water 1 ounce.

Dissolve. Add to each drachm, just prior to use, two or three drops of a twenty-grain solution of nitrate of silver. This solution develops much quicker than the former, and will frequently be preferred on that account.

No. 3.—Sulphate of Iron 20 grains.
Glacial Acetic Acid 10 to 20 minims.
Water 1 ounce.

Dissolve. Add to each drachm, just prior to use, two or three drops of a ten-grain solution of nitrate of silver.

The use of an iron developer is generally considered to facilitate development of half-tone, and render less exposure necessary, and is particularly useful when temperature is low. With a high temperature, there is generally a difficulty of obtaining sufficient intensity; the picture develops well to a certain point, but proceeds no further. When this is the case, the addition of a little honey-syrup (honey one part, water three parts, boil, and filter through paper) will generally have the desired effect, or if not, well wash off the iron, and finish with developer No. 1 or 2.

Acetate of iron has been recommended in place of sulphate, as a developing agent, but my own experience is in favour of the latter, also of acetic over citric acid.

The amount of silver solution and acetic acid used in developing solution, will require varying according to temperature, and state of negative, whether over or under exposed; if the solution colours quickly, less of former or more of latter, or both, will be necessary; or when reverse is the case, and picture comes out slowly, more silver solution or less acid, or both should be used.

No. 4.—Communicated and practised with much success by Mr. Bright.

Powdered Gallic Acid.....	1 drachm.
Glacial Acetic Acid.....	1 drachm.
Alcohol.....	1 drachm.
Distilled Water	20 ounces.

Put the whole into a bottle, and shake occasionally during several hours. When required for use, filter, and to each *ounce* add from four to six drops of a ten-grain solution of silver. Put sufficient of this into a suitable sized developing tray, in which place the plate or plates sensitized surface upwards; the developing solution should well cover the surface of plate, and the whole must be covered to exclude even yellow light, unless quite free from actinic rays. No agitation is necessary, nor any further attention than occasionally examining whether sufficiently developed. The development is slow, occupying from about an hour upwards.

This will be found very useful where the necessary constant attention required by the other developers cannot conveniently be given, and is also peculiarly suitable for developing stereoscopic transparencies, not only from cleanliness of plates so developed, but from the deep, rich tone it gives.

When developed, wash off the solution, and fix with a solution of

Hyposulphite of Soda	4 ounces.
Water	12 ounces.

This has to remain on the plate from a few minutes to ten or fifteen, to thoroughly remove yellow iodide. If used stronger, or solution of cyanide of potassium substituted (the latter also much weakens negative), the film will be liable to crack and curl off when drying.

*The plate may be fixed—that is, yellow iodide dissolved out with the

* This peculiarity of albumen prepared plates was first brought under notice by Mr. Young, of Manchester, so far as regards those prepared by Taupenot process.

above hypo solution, *before or during any part of developing*—the plate well washed and development completed in *daylight*, by again applying developing solution, as mentioned by the Editor of the *Photographic Journal*.—Well wash the plate, and, if preferred, coat with a diluted solution of albumen (prepared albumen diluted with three or four parts water, and filtered), set on one side to dry, and varnish with one of the varnishes mentioned.

FAILURES—THEIR CAUSE AND REMEDY.

Uneven development, showing itself in comb-like markings of over development. This is caused by bath solution being unequally diluted, or too concentrated from spilling some of the water, before mixed with bath on surface of plate. Avoid loss of water; continue it on longer and finish by pouring it on and off several times, letting it run well over edges.

Black patches of over development, chiefly near the edges, but sometimes nearly across the plate, caused by concentrated bath solution upon fingers having got upon the plate and come in contact with albumen when applied.

Similar *Non Sensitive* marks albumen from the same or some other source upon the plate after being well washed.

Non Sensitive marks more or less broad, sometimes extending from corner to corner, at others partly across or along the end of plate. The plate placed on blotting paper upon a *wooden* shelf to dry, or when on glass or porcelain the blotting paper coming in contact with wood. My attention was attracted to the injurious effect of wood upon the prepared plates last winter: having prepared a quantity with great care which I placed on blotting paper upon a new mahogany shelf, leaning against deal, to dry, I found each one to have more or less the non-sensitive mark described; after many unsuccessful attempts to discover the cause, I at last concluded that the damp wood was the offender, this was fully proved by after experiments to be the case. Since then I have invariably used glass, both for placing them upon and leaning them against, and of course have not experienced any repetition of the grievance. It has also caused me more strongly to direct attention to the necessity of keeping prepared plates in *tin* boxes, in preference to even mahogany. New wood, particularly deal, gives the most marked effect, which is favoured by a damp state of atmosphere. When the atmosphere is dry, and wood well seasoned, scarce any injury is visible.

Zigzag marks.—These are from collodion film becoming too dry before immersion, they show themselves on upper end of plate and are seen before exposure.

Wave-like marks of unequal development. Developer not kept in motion.

Film cracking and peeling off during drying, after fixing and washing. Plates not cleaned or not roughed at edges, collodion not sufficiently set before immersion in bath, albumen not carried well up to the edge, or a too strong solution of hypo, or the cyanide of potassium used

for fixing. The use of the dilute albumen solution, after fixing and well washing (previously mentioned in page 5), will effectually prevent mischief from any of the above causes—except the two last, for the use of either of which there is no occasion.

TAUPENOT, OR COLLODIO-ALBUMEN PROCESS.

This was, before the introduction of the “Fothergill,” and I believe justly so, chief favourite of the dry processes; but now it is generally considered less sensitive, inferior in half-tone, and the rendering of near and distant objects in the same picture more troublesome to work, and, when sensitized, deficient in keeping properties to its young but great rival, besides being liable to blisters. It has, however, many ardent admirers, and excellent results are obtained by it.

The mode of manipulating is just the reverse of the “Fothergill Process,” it being essential to success that every trace of free nitrate of silver be removed from sensitized plate. Albumen, also, instead of being washed off is allowed to remain on, and sensitized by re-immersion in bath.

The prepared albumen is made by beating into a froth with a silver fork, or agitating in a bottle that will hold double the quantity—

White of Eggs	4 ounces.
Distilled Water	$\frac{1}{4}$ ounce.
Iodide of Ammonium	20 grains.
Bromide ditto	4 ditto.

And when froth has settled, adding strong liquor of ammonia 40 minims.

The plate is coated with a suitable collodion (*vide* collodion, page 18), and sensitized in a slightly acid thirty-five grain bath,—the bath mentioned page 5 with the addition of four minims (about six drops) glacial acetic acid to each twenty ounces, (as much as half a drachm to an ounce has been recommended, but I have always preferred it only slightly acid, which also colours less quickly). Well wash under a tap, immerse for a few seconds in a weak solution of iodide of potassium 5 grains, water 20 ounces (just sufficient to cover it is all that is necessary, which should not be used a second time). Again well wash, flush with distilled water, and place at an angle on blotting paper, upon and leaning against a place free from dust for a few seconds to drain. It is then coated with the iodized albumen. This part of the operation requires some little experience, and practice only will enable it to be performed with uniform success. Having previously filtered albumen through fine muslin, so as to avoid air bubbles, fix the plate on a pneumatic holder, which hold in one hand, while with the other sufficient albumen is poured on at one corner. The plate is then inclined that it may pass to second, third, and partly off at fourth, carrying with it the small portion of water that was on the surface: the remainder is then to be carried back again over the surface two or three times, and may be returned to stock bottle. Air bubbles, if any are formed, must be carefully removed with a brush. The plate is now

again to be placed at an angle upon blotting paper to dry;—blotting paper, shelf, and room must be entirely free from dust.

At this stage the plate is quite insensitive, and is neither injured by keeping—if quite dry—nor exposure to light. Before required for use it must be again immersed in sensitizing bath for about a minute, thoroughly washed under a tap, flushed with distilled water, and placed at an angle on clean blotting paper, upon and leaning against glass or porcelain, to dry, and finally thoroughly dried in any convenient manner at a temperature not exceeding 120° Fahrenheit. The plates, when sensitized, should not be kept more than from a few days, according to temperature.

The bath will require at least double the quantity of silver previously mentioned (page 6) to be added to keep it to its full strength.

[I have been desirous, previous to bringing out the present edition, to test the merits of a modification which has recently suggested itself from experiments upon the Fothergill Process, with albumen containing chloride of ammonium, but as circumstances have prevented me, and it appears to offer advantages, I give it in its crude state. Some who have the leisure may not object to try it, and, if successful, make known the result of their experiments. It is as follows:—After coating and sensitizing plate in a slightly acid bath, as previously described, instead of thoroughly washing and placing it in a weak solution of iodide of potassium, wash moderately under a tap, place for a few seconds in a solution of chloride of sodium or ammonium—about two grains to an ounce of water—wash well, flush with distilled water, and coat with a *dilute* solution of albumen, containing a chloride instead of iodide salt, composed of

White of Egg	1 ounce.
Distilled Water	9 ounces.
Chloride of Ammonium, free from iron	20 grains.
Strong Liquor of Ammonia	$\frac{1}{2}$ drachm.

Shake all well together in a bottle and filter through paper prior to use. If experiments gave the necessary encouragement, I should continue to reduce the proportion of white of egg to one part in twenty, or even less. This plan, I think, will be found not only to prevent liability to blisters, but give increased sensitiveness and richness of detail, from its more close analogy to the Fothergill Process; particularly if the extreme dilution is found to answer, and I see nothing whatever to indicate that it should not.]

EXPOSURE.

Nearly double that of the Fothergill Process is generally considered necessary.

DEVELOPMENT.

The film having been previously moistened with distilled water, use the Gallic Acid developer No. 4, and in the same manner as previously described, or the following—

No. 1.—Gallic Acid (powder)	1 drachm
Pyrogallic ditto.....	10 grains
Glacial Acetic ditto	$\frac{1}{2}$ drachm
Alcohol	$\frac{1}{2}$ ounce
Distilled Water	20 ounces

Mix, put the whole into a bottle, and occasionally agitate during several hours. Filter prior to use.

No. 2.—Nitrate of Silver	30 grains
Distilled Water	20 ounces

Two parts No. 1 and one part No. 2 in summer, increasing No. 2 as temperature becomes lower to equal parts, are to be mixed and used as directed for previous developer, with the exception of plate being placed sensitized surface *downwards*, or silver may be deposited unevenly in a wave-like form; for this purpose bits of glass may be fastened with liquid glue to the bottom of dish, at the required distances for corners to rest upon.

When sufficiently developed, wash, fix with hypo solution, well wash and varnish as mentioned for Fothergill Process.

HONEY PROCESS.

This, which I believe was first brought into notice by Mr. Shadbolt, consists in the use of a mixture of Honey and water as a preservative agent. It neither requires well washing nor re-sensitizing, is sensitive, and develops quickly, and is preferred by many where short-keeping properties only are required; but it has the disadvantage of film remaining for some time in a tacky state, that catches the dust, and not setting firm like either of the former processes. For further particulars respecting it, I cannot do better than refer the inquirer to Hardwich's excellent work on Photographic Chemistry (a work that every Photographer should possess), or recent numbers of the *Photographic Journal*, in which full particulars will be found, and communications on the subject.

OXYMEL PROCESS.

A modification of the above, in which dilute acetic acid, or vinegar is introduced.

GELATINE AND META-GELATINE PROCESSES.

Here a warm solution of gelatine in distilled water, or gelatine boiled in water with sulphuric acid until it has lost its property of forming a jelly when cool, the acid being afterwards neutralized by adding chalk and the sulphate of lime formed and unacted-upon chalk filtered out, is used as the preservative agent.

The plate after being sensitized is allowed to drain on blotting paper for a few seconds, and back carefully wiped; it is then held horizontally and the solution carefully poured on at one of the upper angles, flooded to second, third, and finally off at fourth, carrying with it the super-

fluos bath ; a second quantity of solution is then applied, which is to be poured on and off several times, till it takes quite evenly over the whole surface. The plate is then placed at an angle on blotting paper, and when dry, is ready for exposure in camera.

EXPOSURE AND DEVELOPMENT.

Same as Taupenot's Process. Various modifications have been recommended, but neither are much practised. Those who desire further information, I would refer to *Photographic Journal* (London), Feb., 1857.

WET PROCESS.—POSITIVES.

As minor details and instructions to beginners are out of the province of the present pamphlet, I shall chiefly confine myself to an account of solutions, &c., adapted for my collodions. The former can be best obtained from Hardwich's work, previously mentioned, or if a less comprehensive and expensive one is preferred, from such a one as the *A B C of Photography*. Let the glass plates be thoroughly clean, then having carefully removed all dust, coat with my Portrait Collodion, sensitize in a thirty-five grain bath containing same amount of glacial acetic acid recommended for Taupenot process. Develope with either of the following :—

No. 1.—Sulphate of Iron	16 to 20 grains.
Glacial Acetic Acid	20 to 25 minims.
Alcohol	10 ditto.
Water.....	1 ounce.

The lesser quantity of iron or larger of acid will be necessary in warm weather, and the reverse in cold.

No. 2, from *Photographic Journal*, recommended as rendering very pure whites :—

Water	12 ounces.
Glacial Acetic Acid	5 drachms.
Alcohol	5 ditto.
Sulphuric Acid	1 ditto.
Sulphate of Iron	4 ditto.

Wash well. Fix with a saturated solution of hypo. For all fixing purposes I prefer this salt to cyanide of potassium, which I discard from the operating room, for not only are fumes from latter deleterious to health and chemicals, but the contact of its solution with an abraded skin is sometimes productive of the most serious consequences ; the hypo solution is rather longer in removing the yellow iodide, and the plates require more washing, but these are trifling inconveniences compared with the risk of those previously mentioned. Well wash, and when dry varnish with the varnish *not* requiring heat, which will be found admirably adapted for receiving colours.

WET PROCESS.—NEGATIVES.

For views, use my original Negative Collodion. For Portraits, my new Portrait Collodion; sensitize in the bath recommended for Fothergill Process and develope with either of the three first developing solutions there given, adding ten minims of alcohol to each ounce, and omitting the addition of silver solution, which is only required when negative will not otherwise become sufficiently intense; wash, fix with saturated hypo solution, well wash, and when dry varnish with either of the varnishes according to circumstances.

KEENE'S NEGATIVE (VIEW) COLLODION.

This Collodion, originally prepared and introduced specially for the "Fothergill Process," for which it has proved "unique" and obtained a notoriety far exceeding my most sanguine expectations, is now equally a favourite, not only for all the other Dry Processes, but also for the Wet, being preferred by the most eminent View Photographers for its sensitiveness, richness of detail, and the admirable manner in which distant objects are rendered by it. It is uniform in composition, gives a tenacious film and possesses good keeping qualities. If kept in a cool place in separate solutions, it remains uninjured a very long time, and when iodized is in good working order from two or three days to one, two, three, or four months according to temperature, &c. It has also proved peculiarly adapted for *hot climates*.

The following I have selected as best illustrating the above remarks:—

Extract from a paper read by Mr. Heywood at a Meeting of the Chorlton Photographic Society, and published in the *Photographic Journal*, Liverpool, October 1, 1858.

"To obtain the greatest amount of sensibility requires careful washing; if the free nitrate is all washed away, as in collodia-albumen, very little sensibility remains; but by washing, as described by Mr. Keene, to whose method I shall presently refer, the highest amount of sensitiveness is obtained. * * * * *I have found such success from using Mr. Keene's collodion, that I have preferred it to other samples, either for this process or others, there is such an absence of what has been facetiously termed 'blackening' and 'whitewash.'*"

Editorial remarks extracted from *Photographic Journal*, London, October 21, 1858.

"By the kindness of our correspondent, Mr. Ebbage, we are enabled to lay on the table of the Society a little volume, containing some forty specimens of his success in the practice of the 'Fothergill Process.' *They are particularly interesting, showing as they do how well the half-tones are preserved by this process rather than by Taupenot's.*"

The negatives were prepared with my Collodion, &c., as directed in my Pamphlet.

"I have been employing your collodion some time for 'Collodio-Albumen Process,' and find it to answer admirably, *and never see such a thing as a blister.*"—From Mr. HOLROYD, Huddersfield, May, 1859.

"I prepared, ten days ago, with your collodion by the 'Fothergill Process,' 24 plates, and last evening completed the developing of 23 as good Negatives as any Amateur could wish. My exposure has ranged between 28 and 30 seconds, with a Ross' Landscap 4½-in. lens."—From Mr. STAFFORD, South Shields, June, 1859.

"I continue to use your collodion, and a twelve months' experience convinces me, that for the 'Wet' and every 'Dry Process,' there is nothing to equal it."—
From Mr. H. KING, Norwich, June, 1859.

Extract from Editorial remarks, in reply to inquiries respecting
 "Honey Process," from a correspondent, "Caustic," in *Photographic Journal*, Liverpool, May 1, 1859.

"The previous coating of the plate with albumen should be avoided, and is quite unnecessary, especially with Keene's collodion, which, by the way, we find admirably adapted to this Process."

Extract from a Letter received from Mr. BARNETT JOHNSON,
 Melbourne, Australia, dated June 13, 1859.

"During the last two and half years, I have tried the collodions of all the best English makers, but none have answered so admirably for the ordinary 'Wet Negative Process' as yours. Although the weather is now generally cold and dull, yet I easily get first-rate negatives in from four to ten seconds, all other English-made collodions that I have had requiring in the same state of circumstances from twenty seconds upwards, and the quality of negatives taken with your collodion is not second to any."

The Collodion is put up in separate solutions; pints, 16 ounces, 11s. 6d.; half-pints, 6s.; with pamphlet included, and forwarded carriage free to any station on the London and North or Great Western Railways; and for the convenience of small consumers, in quarter-pints, 3s. 6d. + B

Observe.—Each bottle of the genuine has pasted over the stopper a label, bearing my signature on each side, and name and address in centre; and it is particularly requested that if offered without this mark of its authenticity, intended purchasers refuse to have it. To be obtained wholesale, retail, and for exportation—securely packed for hot climates—of the sole manufacturer and proprietor, ALFRED KEENE, Chemist, 115, Warwick-street, Leamington; also of the appointed agents, as advertised, and at the Photographic warehouses generally.

KEENE'S NEW PORTRAIT COLLODION, BOTH FOR POSITIVES AND NEGATIVES.

At the instigation of several consumers, I have been induced to turn my attention to the production of a *Portrait Collodion* suitable both for positives and negatives, combining the peculiar excellence of my negative (view) collodion, with the requisites for the production of a superior first-class portrait, and feel much confidence in introducing it to the notice both of professionals and amateurs.

It is put up in the same size and price bottles as the negative (view) collodion, from which it is distinguished by having on the label, respectively, "*Portrait Iodizing Collodion*," and "*Plain Portrait Col-*

Solution

lotion." As a protection, each bottle has also a signature label over the stopper, as before described. To be had (larger sizes carriage free, as before stated) direct from the Laboratory, 115, WARWICK-STREET, LEAMINGTON, or through the agents for my negative (view) collodion.

KEENE'S PLATE CLEANING LIQUID,

By which glass plates are thoroughly and expeditiously cleaned, 1s. and 2s.6d. per bottle.

KEENE'S VARNISH,

Not requiring heat, suitable for both positives and negatives, 1s. 6d. and 4s. per bottle.

KEENE'S NEGATIVE VARNISH,

Requiring heat. This being a strong varnish, is recommended where negatives are likely to be much used, also for hot climates, 1s. 6d. and 4s. per bottle.

Specimen Stereograms, "Fothergill Process," of Warwick Castle, 2s. each, post free.

A limited retail supply of Prepared Plates, "Fothergill Process," Stereoscopic, 9s.; 7in. by 6in., 14s. 6d.; and 8½in. by 6½in., 18s. per dozen.

Negative and Positive Baths; Prepared Albumen, and the various Solutions described; Prepared and Commercial Nitrate of Silver, and other chemicals; Lenses, Cameras, Baths, Trays; Tin, Mahogany, and White-wood Plate Boxes; Glass Plates; Paper, Albumenized and Plain; Mounts, Bone Forceps, and other requisites for the practice of Photography. Price List forwarded on application.

KEENE'S POSITIVE COLLODION.

A superior Article at a moderate price, that should be in the hands of every Professional Photographer.

Price, Iodized, 2-oz. bottles, 1s.; 4-oz. ditto, 2s.; 8-oz. ditto, 4s.; and in separate Solution, Pints, 16-oz., 8s., bottles included.
